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Emergency Management of Urban Major Hazards Based on Information Synergy

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Abstract

Emergency management has become an important subject. In the process of urban development. In this paper management problems and methods for great hazard sources are discussed. Based on the analysis of the structure and function of urban major hazards emergency system, this paper offers the available strategy and methods for the perfection of urban major hazards synergy.

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1. Introduction

Along with our country the acceleration of urbanization, urban and expansion of the size of the city's population, high concentration, building high density, Once in the cities of disasters, the hazards is compared to other areas, to bring the city residents of material and spiritual loss will be very great. Because the city major hazards are distributed widely, some with linear and network distribution in densely populated areas of concentration, public facilities, and characteristics of complex working state crisis, therefore, how to make that harm, the strong chain of major hazard in the city emergency system management and monitoring of the under, how to build an economic, optimization of the city major

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hazards emergency management network, how to further establish city major hazards emergency system coordinate system has become a city safety management is an important field of research content.

City after the disaster could quickly appropriate responses reflect city management ability, and city management ability is by the available resources and capital, and how much of these resources effectively play the best value for the mouth of the ability to determine^[1]. Therefore, in order to effectively play the city emergency management resources the maximum effect of scholars at home and abroad about the city emergency system in collaborative mechanism research. The city emergency linkage command system is designed to provide integrated public security, fire control, rescue, transportation etc emergency responders based on GIS, GPS etc space information technology city emergency service platform construction, and realize the different department and different and different between the police kinds unified command and rapid response of item, collaborative combat, emergency response, realize unified command, graded linkage response. Visible, establishing emergency rescue linkage system for urban public security work is an inevitable trend.

2. City major hazards emergency management system

2.1. City major hazards classification

In GB 18218-2000< Identification of major hazard installations > major hazard installations are long-term or temporarily production, handling, use or storage dangerous goods, and the number of dangerous goods is equal to or more than the amount of critical units (including sites and facilities). Because there is a lot of major hazard installation of inflammable, explosive or toxic substances, and there is a wide range of distribution, hazards working state and other characteristics, if complex cities lack of effective operation emergency management system, once accident, will not be effective control, will cause significant casualties and property losses and severe environmental damage, or even negative social influence.

China's major hazard identification standard, the risk of hazard is divided into three level for security in critical condition, namely for secondary accidents to the edge of the state; outbreak Level 3 for dangerous state. And then the risk to critical condition and dangerous state evaluation, and find out the hidden dangers and detailed, and to immediately take measures of possible consequence, such as the location of the accident, spatial development scope and endanger scope of analysis and prediction. An effective sound emergency system can realize to the major hazard installation identification and classification, and when hazards in time for the serious accident emergency plan and generate the emergency plan^[2].

2.2. City major hazards emergency system structure and function

Major hazards caused the harmfulness of both with the nature of dangerous goods, the quantity and related to the structure of the system and the city emergency relevant. At present, urban management decision makers have to recognize the serious consequences of urban disasters, began to formulates target-oriented plan or take measures to prevent or slowed city hazard, and gradually formed a city major hazards emergency system of primary mode, For example the commonly used 110, 119, 120 system. The first city emergency system to cable phone mainly alarm or ask for help and command. Along with the computer technology and wireless communication technology development, the city emergency system automation and intelligent level, appeared to have the computer backbone network and computer aided scheduling system, wireless network and cluster scheduling system, geographic information system, etc.

The city emergency system from to communication system is given priority to, gradually to communication system and information system of combining the development direction^[3].

With city transportation artery unimpeded, in the information resources sharing, the city emergency management based on the sharing of resources to further strengthen and improve the ability of city emergency management resources coordinated ability, with information and resources for into the freely crisscross of city characteristic of emergency management network construction laid a foundation

The city emergency system is to improve safety and sustainable development of the city of the ability of a important measures, establish efficient unified the city emergency system is the city of the construction of modernization important choice, around the city emergency management resources, the main body of the emergency management by sharing information platform, can not only realize the network of emergency management resources, and be able to realize the coordination of resources scheduling and emergency response quickly, and enhance the city emergency management system of real-time and efficiency.

3. City major hazards emergency system coordinate system

Ensure the safety of the power in city driving, cities have set up their own emergency management system, effectively promote the city of public emergencies of the emergency management ability. However, many problems are exposed department division, lack of unified command, incident occurs in makeshift command organization, there is no guarantee that effective command; Emergency resources repetitive construction; Low level of information resources sharing. These problems limited the city emergency management systems, needs to refer to the role of collaborative mechanism further perfection.

3.1. The main body of the whole city emergency management synergy

In the city emergency management system, city emergency command center will different department command system effective integration in together, can not only realize the heterogeneous system, but also can solve the interconnection between each system of real-time large capacity data exchange, security, authentication and authorization transmission business supervision, many problems such as network convergence, a unified shortcut , quick orientation, rapid response, business linkage, concentration of supervision, scientific command, expansion of good and so on the characteristic

3.2. City major hazards emergency information synergy

Emergency activities need information from different regions, space, units and departments, the need for information of the integration of resources, to exchange data, share information, support emergency response activities. Because enterprise and enterprise, the enterprise and government between safety management department of communication and exchange between very little, the lag of the collection wrong information and often lead to accidents, accident control lackadaisical main reason. Therefore, must establish based on information synergy city emergency management mode, and to create a unified information platform is the key to realize information synergy. The integration of the platform involves network platform, emergency interact platform, emergency command platform, space information platform and decision support platform, and five aspects.

3.2.1 Emergency network platform

Network communication platform is the information transmission platform, is the foundation of the whole system, no solid network communication platform can't realize the sharing of the information resources and command the instructions to send, it including wired communications system, wireless communication system, computer network system, etc. The city emergency system is best electronic government affairs of the unity government network platform to rely on, set up with the emergency management subject to connect to the network, to realize information data exchange and sharing, the video conference and video over the remote video monitor services, access, and other functions.

3. 2 .2 Emergency interact platform

Emergency interact platform is a unified emergency response platform, for the government, enterprises and the community, to provide a comprehensive range of services; Platform based on network communication platform, and the parties jointly building, beyond all, have to all sorts of department of network open, goodwill interworking sex and non-exclusive; Create a condition actively, promote the special and public service, and the combination of maximum available resources

3. 2. 3 Emergency command platform

Emergency command platform to space information platform, which is the basis of emergency command post needs of all kinds of information, and to the emergency response plan as the instruction, the auxiliary emergency command, with leaders of emergency inner sanctum--running environment for complete major incident command and control, effectively guide the on-site command task.

3 .2. 4 Space information platform

Space information platform to provide the spatial data stay set, processing, storage, display, application and management function, effectively improve the function of the city emergency management visualization. Basic geographic data including basic control data, digital line graph (stroke), digital map grid buildings (DRG), digital elevation model (DEM), digital is projective like figure (DOM), 3 d model data and comprehensive pipeline data, etc.; Basic geological data including formation data, geological structure data, hydrology geology data, earthquake geology data, environment geology data and geological resources data, etc.; Project space data including all kinds of urban and regional distribution, image map and their attributes, such as road map, dangerous goods distribution, incident point, epidemics, high-risk area chart the danger zone and the isolation zone, etc.

3. 2 .5 Decision support platform

Decision support platform to brainstorm, formation decision, support, and it is the command city emergency management system of senior platform, the other platform based on the run from a database, extraction of data, using mathematical model, the creation of the necessary decisions, to help decision makers use data and mathematical model to solve problems half structural. Data warehouse, on-line analysis and data mining are three great decision support technology, independent, related, is a new generation of decision support system foundation^[4].

Based on the information synergy city emergency management system of two aspects: one is the collaborative information from the entire city each emergency management main body, can through the information processing system and the establishment of a comprehensive information platform, make the government safety management department, hazards such as enterprise emergency management

subject can through the information platform, and the knowledge of emergency information in accident happens quickly animal husbandry set the scene information, through information processing system and emergency decision-making system, to make a quick emergency decision, and at the same time through information network and the city emergency management subject to realize information synergy; Two is to strengthen the organization about cities between emergency management work communication and coordination, can through the regular communication, regular meeting, expert consultation, cooperation projects improve the effectiveness of the collaborative way

3.3. City major hazards emergency resource synergy

In the city emergency management, resources that can be used to master the city, relieve or eliminate crisis security infrastructure, safety monitoring and emergency relief supplies, security personnel. The use of these resources for time, place, scheduling method and so on all needs scientific planning and synergy. Based on the resource synergy city emergency management system, can be squeezed from the city departments, units of all emergency management resources (including safety materials, capital and talents, etc.) for the whole society, realizing the social resources used to maximize the use of resources to expand, with city emergency management resources coordination ability, effectively avoid the resource conflict to have the important meaning.

3.3.1 Team synergy

When an emergency program running, there are always some problems such as the responsibility of ambiguity things exposed. Collaborative provide alternative ways to solve disputes, in order to achieve the goal of emergency collaborative, need in the related department managers exchanges and work to build up a interactive relationships, communication and information exchange is in partnership trust is built, the precondition of the different positions and departments timely communication and mansion feed through to the related with reached an agreement, realize the vision of emergency management.

3.3.2Emergency resources scheduling synergy

For major hazards prevention and emergency rescue, accident treatment, the need for security resources input. Even spend the time and energy to analysis the hidden trouble of the potential need to have cost investment, so there'll be a cost and profit. The safety of the optimization scheduling system resources management is to get through to safety input-output ratio and accident economic losses, and other aspects of the analysis, the city with the least amount of how to achieve the highest possible safety input city safety.

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